

# INTEGRATED CIRCUIT CHIP HAVING A RINGED WIRING LAYER INTERPOSED BE- TWEEN A CONTACT LAYER AND A WIRING GRID

## Abstract

An integrated circuit chip (104) having a contact layer (136) that includes a plurality of Vdd, Vddx, ground and I/O contacts (116, 120, 124, 128) arranged in a generally radial pattern having diagonal and major axis symmetry and generally defining four quadrants. An X-Y power grid (140) is located beneath the contact layer and includes metal layers (LM') each having a plurality of wires (68) extending in one direction. The direction of the wires alternates from one metal layer to the next adjacent metal layer. A wiring layer (1M) is interposed between the contact layer and power grid layers to provide a well-behaved electrical transition between the generally radial Vdd, Vddx and ground contacts and the rectangular X-Y power grid. The interposed wiring layer includes concentric square rings of Vdd, Vddx and ground wires (144, 148, 152) located alternatingly with one another. The Vddx

wires are discontinuous between adjacent quadrants so that the magnitude of  $V_{ddx}$  may be different in each quadrant of the chip if desired.